METRO BOSTON OFFICE OF HOMELAND SECURITY
Application for Funding
MOHS Project Funding: Equipment Procurement
Date of Submission: March 18, 2005

Department name submitting the Project Plan

Boston Police Department
Crime Laboratory

Other departments/organizations involved in the Project design and implementation

N/A

Contact information of person responsible for creation of Project Plan, including name, title, address, phone, fax and email.

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Signature(s) of Department Head(s):

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Mr. Donald R. Hayes, Jr.

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Superintendent Robert Dunford
Bureau of Field Services

The problems or area of concern that the sponsoring Department wishes to address through this Project:

The accredited Boston Police Department Crime Laboratory is situated in the heart of the largest city in New England. The BPD Crime Lab strives to serve the greater community as broadly, efficiently, and expertly as possible, and to be prepared to face the challenges of changing threats to public safety.

The ability of the ASCLD/LAB accredited Boston Police Department Crime Laboratory to perform quick and sophisticated analyses of complicated chemical mixtures, such as hazardous materials, unknown powders, liquids, solids, and unknown debris would be materially improved, or, in some cases, made possible only, with the addition of a pyrolysis gas chromatograph-mass spectrometer (PGC/MS) to the arsenal of existing equipment (i.e., the Fourier Transform Infrared Spectrometer and the scanning electron microscope with an X-ray detector) already used by the trace section of the crime lab.

At present the Boston Police Department Crime Laboratory has limited instrumental resources for identifying complex mixtures. The purchase and implementation of a PGC/MS, capable of separating, analyzing, identifying, and quantitating compounds of complex organic mixtures, would fill a large and long-identified lacuna in the instrumental tools available to us to analyze and identify each component of unknown solids, liquids, and gases.

The Boston Police Department has the space and knowledge ready for the acquisition of a PGC/MS. It identified several years ago by outside auditors as a hole in the line-up of equipment necessary to support the efforts of officers and officials investigating crimes, which may threaten the security of the area.

A gas chromatograph-mass spectrometer with a pyroprobe consists of three instruments used together to maximize the information gained from each sample analyzed. A gas chromatograph separates a sample into components. The mixture tested is separated on a column. The time at which each component emerges from the column is measured and used to aid in chemical identification. When the gas chromatograph is paired with a mass spectrometer, the chemical components emerging from the column of the gas chromatograph are further divided into molecular fragments, which are recorded and quantified. The resulting mass spectrum gives a great deal more information than the gas chromatograph by itself, and can usually *uniquely* identify the components of mixtures of chemical substances. Whereas, the GC/MS works well for identifying volatile chemicals, the addition of a pyroprobe makes the analysis of solids possible using the powerful combination of pyrolysis (the breaking apart of large complex molecules into smaller, more analytically useful fragments by applying heat) with the separation and analytical capabilities of the gas chromatograph and mass spectrometer.

The Gas Chromatograph-Mass Spectrometer is specifically mentioned as one of the allowable expenses under Section 5, Detection Equipment:

> Equipment to sample, detect, identify, quantify, and monitor for chemical…and explosive agents throughout designated areas or at specific points, including equipment necessary to enhance laboratory detection capabilities.

The consequences of this Project not being undertaken & Alternative solutions to the problems or areas of concern, if any to this Project:

There are no alternative solutions to addressing the problems. As there are no alternative solutions for immediate analysis of questionable materials, any materials that are potentially deemed hazardous to public safety would have to be sent to the MA State Police for analysis. From past experience in other similar requests for analysis, and seeing that with hazardous materials time is of the essence, this could potentially delay securing compromised areas and notifying the public of a potential hazard. The consequences of this action are unthinkable.

The Project's ability to help achieve MBHSR goals of prevention, preparedness, response and recovery from a terrorist attack:

Knowledge is power. The quicker that information can be gathered, assessed and disseminated, the faster that recovery can begin. While the acquisition of this equipment does nothing to impact the prevention of a bio-hazard incident, the readily available access of such equipment improves our preparedness, response and recovery from a terrorist attack or bio-hazard accident. As the capital of Massachusetts, and an epicenter of New England, being well prepared for any incident is vital to the protection of our community, its citizens and visitors. This is particularly vital as we are a large medical, as well as a new bio-hazard laboratory center.

The Project's impact on the Metro-Boston Homeland Security Region and regional partners & Other organizations/parties that need to be involved in the assessment, planning and implementation of the project:

The use and access of this equipment will be available to all of our USAI partners for the analysis of materials believed to be of concern in regional security. While none of the USAI partners will participate in the assessment or planning phases of this project, the Boston Police Department will readily seek guidance and suggestions from our UASI regional partners for the implementation and future use of the GC/MS equipment procured.

The expected outcomes or deliverables of this Project

The Boston Police Department expects that the acquisition of this equipment will help to strengthen the security of the City of Boston and its surrounding communities. As a new line of defense we will be able to immediately address the identification of unknown samples and better inform and protect our citizens. This is vital with the existence of the new biohazard laboratory being built in the South End of Boston and previous anthrax scares that occurred following September 11th, 2001.

The expected timeline of the Project, including start and end dates, as well as significant milestones:

The Boston Police Department expects that, once approved, the requisition would be submitted immediately with purchase, installation and beginning utilization within three months of approval. While no initial costs are expected, we will examine additional expenses as they occur and their impact on the existing and future operating budgets.

Project Budget:

B	C	D	E
Account	Account Description	Item Description	Total Item Cost
51000	Permanent Employees		
51100	Emergency Employees		
51200	Overtime		
52100	Communications		
52800	Transportation/Travel		
52900	Contracted		
53000	Motor Vehicle Energy Supp		
53500	Med/Dental Supplies		
53600	Office Supplies		
53900	Misc. Supp/Materials		
54900	Current Charges		
55000	Automotive Equipment		
55900	Equipment	Pyroprobe	$ 19,628.00
		Gas chromatograph/mass spectrometer	$ 88,359.00
	Total		$107,987.00

Complete plans should be submitted with any referenced materials to:

Metro-Boston Mayor's Office of Homeland Security
Boston City Hall, Room 603
1 City Hall Plaza
Boston MA 02201